

Appendix I



Ken Sturm/USFWS

Mushroom

ESA Section 7 Consultation

INTRA-SERVICE SECTION 7 BIOLOGICAL EVALUATION FORM

Originating Person:

Beth Goldstein, Refuge Planner
U.S. Fish and Wildlife Service
300 Westgate Center Drive
Hadley, MA 01035

Telephone Number: (413) 584-2634

Date: April 20, 2010

- I. **Region:** R5
- II. **Service Activity (Program):** Service-preferred Alternative B from the Canaan Valley National Wildlife Refuge draft Comprehensive Conservation Plan and Environmental Assessment (draft CCP/EA)
- III. **Pertinent Species and Habitat:**
 - A. **Listed species and/or their critical habitat within the action area:**

Cheat Mountain Salamander (*Plethodon nettingi*)-Threatened
Indiana Bat (*Myotis sodalis*)-Endangered
 - B. **Proposed species and/or proposed critical habitat within the action area:**

None
 - C. **Candidate species within the action area:**

None
 - D. **Include species/habitat occurrences on a map.**

Attached.
- IV. **Geographic area or station name and action:** Canaan Valley National Wildlife Refuge, Davis, WV
- V. **Location:** See attached map
 - A. **Ecoregion Number and Name:** Ohio River Valley Ecosystem
 - B. **County and State:** Tucker County, West Virginia
 - C. **Section, township, and range (or latitude and longitude):**

Latitude = 39.1018, Longitude = -79.4349

D. Distance (miles) and direction to nearest town: 8 miles southeast of Davis, WV

E. Species/habitat occurrence:

The Refuge supports a diversity of wildlife in forest, meadow, and wetland habitats. A total of 286 species of fish, amphibians, reptiles, mammals and birds are known or expected to occur in the Canaan Valley. The land is managed and protected to maintain biological diversity and to protect and benefit threatened and endangered species and resident and migratory birds.

At least 28 species of fish occur in the rivers and streams including naturally-reproducing brook trout (*Salvelinus fontinalis*) populations. Redside dace (*Clinostomus elongatus*), a rare state species, has also been found on the Refuge. Water quality concerns on the Blackwater River center around its suitability as a naturally-reproducing trout stream.

Ten species of reptiles and 18 species of amphibians are known or likely to occur on Refuge lands. The most notable of these is the federally-threatened Cheat Mountain salamander, which occurs in high elevation spruce and hardwood forests.

At least 170 bird species are known or likely to occur in Canaan Valley. Migratory birds pass through the valley and have been well documented by long term banding and monitoring along the Allegheny Front. The area is important for those species requiring wetland habitats for foraging and resting during migration such as waterfowl (i.e., American black ducks (*Anas rubripes*)), herons, shorebirds and American woodcock (*Scolopax minor*). Canaan Valley has been cited as an important staging and nesting area for American woodcock and Wilson's snipe (*Gallinago delicata*) due to the expansive wetland and early successional habitats present. Peregrine falcons (*Falco peregrinus*) are periodically seen in the area and northern goshawks (*Accipiter gentilis*), a Species of Concern, have been documented nesting at the north end of the valley and are observed occasionally at the south end. Bald eagles (*Haliaeetus leucocephalus*) are common during fall and winter months and golden eagles (*Aquila chrysaetos*) have been seen during migration.

All 48 species of mammals are considered year-round residents with the exception of migratory bats. The most conspicuous mammal is the white-tailed deer (*Odocoileus virginianus*), which has reached high densities in the southern portion of the valley including the Refuge. Deer browse pressure is heavy in the south end of the valley and likely a limiting factor to the regeneration of several plant species, most notably balsam fir. Wetland areas support populations of beaver, muskrat (*Ondatra zibethica*) and mink (*Mustela vison*). River otter (*Lutra canadensis*) may occur on the Refuge. Upland areas support species such as long-tailed weasels (*Mustela frenata*), bobcat (*Lynx rufus*),

striped skunk (*Mephitis mephitis*), red fox (*Vulpes fulva*) and grey fox (*Urocyon cinereoargenteus*), black bear (*Ursus americanus*) and fisher (*Martes pennanti*). Species of Concern may include the southern water shrew (*Sorex palustris punctulatus*), Appalachian cottontail rabbit (*Sylvilagus obscurus*), southern rock vole (*Microtus chrotorrhinus carolinensis*), and the Allegheny woodrat (*Neotoma magistar*).

The Refuge provides habitat for one threatened and one endangered species. The threatened Cheat Mountain salamander (CMS) and the endangered Indiana bat have both been documented on the Refuge. The West Virginia northern flying squirrel (*Glaucomys sabrinus fuscus*) which occurs in Refuge forests was delisted as an endangered species in September 2008. The bald eagle, delisted in August 2007, uses the Refuge during migration. Both the West Virginia northern flying squirrel and the bald eagle, although delisted, remain priority species for Service protection and management.

VI. Description of proposed action

The draft CCP/EA evaluates three alternative scenarios for managing the Refuge over the next 15 years. The CCP Planning Team and the NWRS Senior Leadership Team have identified Alternative B as the Service-preferred alternative. Alternative B combines the actions we believe would most effectively achieve Refuge purposes, vision and goals, and respond to public issues. It emphasizes management of specific Refuge habitats to support focal species whose habitat needs benefit other species of conservation concern in the northern forest. In particular, we emphasize habitat for priority bird species of conservation concern identified for Bird Conservation Region (BCR) 28, Partner's in Flight (PIF) Physiographic Area 12 and the West Virginia Conservation Action Plan. Additionally, it addresses the Refuge systems mandate to consider managing Refuge habitat under the Biological Integrity, Diversity and Environmental Health policy (2001).

Management actions to support objectives outlined in Alternative B include the management of early successional habitat for migratory bird species (includes grassland, shrubland and edge hardwood forest cutting) and to conduct restoration actions on the Refuge's forested habitat. Restoration activities include reducing fragmentation, improving understory development and increasing mature forest characteristics of northern hardwood forests. Mixed red spruce/northern hardwood forests would be managed to increase, where suitable, spruce forest habitat and mature forest characteristics of this forest type.

Alternative B proposes to continue acquisition of over 8,900 acres within the approved Refuge boundary. This includes the surrounding watershed of the Little Blackwater River which completely

surrounds a wetland tract currently owned by the Refuge. This is the largest single purchase currently within the acquisition boundary. However, other significant tracts occur at the south end, including a 1,485-acre parcel which includes habitat for the threatened CMS and recently delisted West Virginia northern flying squirrel.

Below are specific descriptions of the listed species that could potentially be affected by Alternative B of this draft CCP/EA. Goal and objective numbers are provided to direct the reviewer to the appropriate sections in the draft CCP/EA that discuss actions that could potentially affect these species. We are seeking informal consultation on Alternative B.

Cheat Mountain Salamander

The CMS is a threatened species and a priority for Service protection and management. They are only found in West Virginia and are limited to approximately 80 fragmented populations in only five counties in the State. The Refuge's population represents one of the most northern for this species. Being a federally-threatened species tied to highly restricted plant communities, they are also considered a priority for conservation by the State as detailed in the State Wildlife Conservation Action Plan (WVDNR 2006).

Only one tract at the south end of the Refuge has been documented as occupied habitat for this species. Habitat requirements include a cool moist forest floor with adequate coarse woody debris and typically with a spruce or mixed spruce-hardwood forest overstory. The main threat to the CMS is degradation of high-elevation red spruce and spruce/northern hardwood forests. Since the CMS requires moist, cool habitats, any alteration of the habitat that reduces soil moisture and/or relative humidity can lead to adverse effects such as reduced reproductive success through nest desiccation (Pauley 2008a; Service 1991). Other threats include competition with other salamanders, drought, and pollution.

Past land use on the Refuge has removed most of the historical conifer forest cover allowing forest floor temperatures to increase, and relative humidities to decrease, thereby reducing habitat suitability for this species. Additionally, much of the tract where the salamander habitat is located contains old logging and skid roads, some of which are active cross-country ski trails operated by White Grass Touring Center. Roads and some trails have been noted impediments to CMS movements, possibly fragmenting and genetically isolating populations as well as making these populations more vulnerable to stochastic events. Refuge surveys have documented two cross-country ski trails which have populations of CMS on both sides of the trails. Research is currently being conducted by Dr. Tom Pauley to evaluate how types of trails may act to fragment salamander

populations. Narrower trails with a closed canopy may not act as a strict barrier as other types of trails or logging roads.

Strategies which occur within habitat types occupied by CMS can be found under Goal 2, Objectives 2.3 to 2.5.

Indiana Bat

The Indiana bat is a federally-listed endangered species and a trust resource of the Fish and Wildlife Service. Primary foraging habitats include wetland and riparian areas, bottomland forests and edge habitats. Roost trees are typically in wooded wetlands, bottomland and floodplain forests, as well as upland habitats. Habitat loss and degradation, overutilization for scientific purposes, disease and predation, environmental contaminants, and the inadequacy of existing regulatory mechanisms for summer habitat threaten the population viability of the Indiana bat across its range. The Indiana Bat Draft Recovery Plan (USFWS 2007a) calls for the conservation and management of hibernacula and adjacent lands, summer habitat, and winter populations, for the monitoring of populations, and for the development of public outreach and information programs (Recovery Actions 1, 2, and 4). If Indiana bats are using the Refuge for foraging and roosting, then protecting, maintaining, and improving habitat quality on the Refuge would contribute to the viability of the species and its recovery. The conservation of this endangered species is now more important than ever as white-nose syndrome spreads across the range of the Indiana bat.

Acoustical recordings from 2003, 2006, 2007, and 2008 suggest Indiana bats are using riparian corridors and beaver ponds on the Refuge for summer foraging habitat. Mist-netting provides visual confirmation of their presence, reproductive information, the types of Refuge habitats used, and the seasons they are using the Refuge habitats. Summer use indicates a potential for maternity colonies to be located on or near the Refuge. As a key stage in the life cycle of the species, it is imperative to know the location of maternity colonies and protect them from disturbance. Radio telemetry of any lactating or recently lactating female bats found on the Refuge could define the habitats and locations that are important for this endangered species.

The strategies related to Indiana bats can be found under Goal 2, Objective 1.2 of the draft CCP/EA. They include working with the USFWS West Virginia Field Office (WVFO) and the West Virginia Division of Natural Resources to coordinate mist net surveys for Indiana bats on Service-owned lands. Additionally, the Refuge will continue acoustical monitoring (ANABAT and SONOBAT) to detect potential presence of bats along all suitable habitats.

VII. Determination of effects:

A. Explanation of effects of the action on species and critical habitats in items III. A, B, and C (attach additional pages as needed):

Cheat Mountain Salamander

Under current management of Refuge habitat occupied by the salamander, the Refuge has received concurrence in previous consultations (1999, 2003) of no adverse affects given conditions of no new trails and limited trail clearing on existing trails. Alternative B proposes to maintain existing trails for winter use, but no new trails will be constructed through CMS habitat. Additionally, conditions should improve as the Refuge proposes to revegetate edges of trails to improve habitat on Powderline and Three-Mile cross-country ski trails. Other techniques to facilitate salamander crossing of these trails will be considered as well including raised "boardwalks" which will provide cover, increase humidities and eliminate exotic vegetation currently growing on these trails.

Public use on Powderline and Three-Mile Trail only occurs during winter months by cross-country skiing and snow shoe access when there is snow on the ground. During these times of year, salamanders are not active and are underground (USFWS 2009). Furthermore, because these trails are not open to the public outside of the winter time, the trails and the substrate on the trails remain undisturbed during the time of year when the salamanders are active. Therefore these public uses are not likely to adversely affect CMS.

These old roads, now public use ski trails, have an altered microhabitat and are not habitat for CMS; therefore, we do not expect this species to be living in these trails. Therefore, the potential for CMS to be present on the trails is limited to salamanders occasionally crossing the trail.

Salamanders may cross the trail in low numbers until temperatures drop and the salamanders are no longer active and present on the surface. Their presence on the surface is temperature and moisture dependent, thus dates of emergence and submergence depend on these environmental factors and can vary from year to year (Pauley 1978a; 1978b; Pauley 2005 in Pauley 2008). It is estimated that when temperatures are below 55°F salamanders are not likely to be active on the surface (USFWS 1991). Based on climate information from 1948 to 2000, average temperatures in Canaan Valley do not exceed 55°F until May 14 and fall below 55°F after September 26 (Brooks pers.

comm.). Under the current conditions of the special-use permit, maintenance operations can only occur between October 10 and April 30. This is well beyond when salamanders are likely to be present on the surface. Therefore the chance of direct take is extremely unlikely (discountable).

The chance of direct take from maintenance activities is further limited due to the expected low amount of active maintenance conducted on these trail sections. Maintenance typically occurs on one to two days per year on these higher elevations trails and consists of hand crews with one all-terrain vehicle (ATV) and trailer to haul equipment. ATV use is limited to usually two passes up and down the trail to move tools (Chase, pers.comm). Maintenance activities typically include the removal of downed trees and limbs which have fallen across the trail during the previous season and maintaining existing water bars to prevent erosion. The risk of the maintenance crew encountering a salamander is extremely unlikely to occur (discountable).

Trails have been noted impediments to CMS movements, possibly fragmenting and genetically isolating populations as well as making these populations more vulnerable to stochastic events. Pauley (unpubl. data in Service 1991) found that roads, and potentially some trails, serve as barriers that prevent territories of different individuals from overlapping, thus fragmenting populations and gene pools. Heavily traveled trails can result in removal of leaves and other forest litter, leaving bare trail treads (USFWS 1991; WVDNR 2000, 1999). Preliminary data suggest that CMS rarely cross trails and other openings that lack sufficient leaf litter cover (Pauley 2005 in Pauley and Waldron 2008). CMS use forest floor litter as foraging cover and refugia, especially during the day. Therefore, the extent to which trails and roads serve as a barrier to CMS most likely depends on the site-specific characteristics such as width, canopy cover, substrate material, compaction, and level/type of use.

Conditions related to blocking movements for salamanders appear to be related to increased temperature and humidity resulting from an open tree canopy as well as the removal of vegetation and leaf litter through public use activities creating bare soil conditions. The cross country ski trails that White Grass maintains are not used outside the ski season for public use and are not heavily traveled. Therefore excessive trampling resulting in the removal of litter and vegetation to create bare dirt surfaces does not occur on these trails. Because habitat on the trail is predominately grass and fern cover with limited rock and woody debris, it likely permits salamanders to move across the trail. In addition, both Powderline and Three-Mile trails are narrow and have partial canopy cover providing shading and cooling effects to the trail surface. This creates more suitable conditions for salamanders to move across the trail. The lack of bare soil conditions coupled with the presence of canopy cover suggest that these trails do not create a barrier to salamander movement.

We do not expect the presence of these trails to fragment these populations creating genetic barriers. For this reason the trails are not likely to cause indirect adverse effects to CMS.

Planting native tree species such as red spruce along the trails would eventually provide a more closed canopy over the trail and improve substrate and vegetation on the trail itself. Native tree species would eventually shade out all of the grass and fern cover which currently dominates the trails, and would improve micro-habitat conditions for salamanders by increasing leaf litter, woody debris, and soil moisture (USFWS 1991). These trail improvements would provide a more conducive corridor for CMS to move between upslope and down slope populations. Revegetation of Refuge cross-country ski trails and increasing canopy cover is an additional conservation measure the Refuge can accomplish to further enhance habitat conditions for the salamander.

In the future, the Refuge would also consider other options such as replacing trail segments with boardwalks to further facilitate salamander movement across trails. This action is one of the recommended management guidelines in the recovery plan for this species (USFWS 1991). In 2009, the Monongahela National Forest initiated a study to design more effective road and trail maintenance activities to benefit CMS populations (Pauley and Waldron 2008). If those results apply to habitats on the Canaan Valley NWR, the Refuge will consider implementation of similar measures.

Habitat management actions aimed at increasing the patch size, connectivity and structure of red spruce forest could adversely affect CMS. Silvicultural techniques to release understory spruce include girdling and small patch cuts to decrease canopy cover and allow understory spruce to gain the overstory. In the short term this action will increase light penetration to the forest floor increasing temperatures and decreasing humidities, both of which could affect CMS occupancy and distribution. Impacts can be minimized by reducing the number of trees girdled or felled to release understory spruce in areas occupied by CMS. Planting may also impact CMS by potential direct take through the action of using a dibble bar to plant trees. The Refuge's focus largely is to improve red spruce dominance and structure outside of occupied salamander habitat to increase the size of existing spruce cover and connect fragmented stands. This will lead to increased acreage of suitable habitat for the species and increase the species' resilience to stochastic events and long term climate change. To prevent adverse affects, any overstory cuts will have a minimum 300 foot buffer between occupied habitat and thinning operations. Areas targeted for silvicultural operations will be surveyed for CMS prior to any management action. Consultation and coordination with the WVFO will occur to prevent adverse impacts from occurring.

Strategies listed to achieve spruce management objectives 2.4 and 2.5 include:

- Improve habitat structure for Refuge focal species through thinning and/or other stand improvement operations. Methods would include, but are not limited to, girdling operations, single tree or group selection cuts of up to one-half acre in size with cutting cycles of 15 to 20 years, and reserved shelterwood cuts. All management locations will be inventoried for CMS presence prior to cutting. During planning we will consult closely with the WVFO and comply with the CMS Recovery Plan (USFWS 1991) recommendations when implementing cutting operations.
- Work with partners to experiment with silvicultural techniques that will increase long-term canopy dominance of red spruce.
- Plant spruce seedlings in high priority areas for regeneration in up to 20 acres per year.
- Collaborate with land management agencies and adjacent landowners to increase connectivity of spruce stands across management boundaries.
- Identify, connect, and enlarge spruce stands by under-planting existing vegetation with spruce seedlings.

With adequate surveys and consultation with the WVFO we predict that no adverse effects to this species will occur from proposed management strategies in Alternative B of the draft CCP/EA.

Indiana bat


Habitat management actions proposed in Alternative B of the draft CCP/EA will complement the habitat needs of Indiana bats by increasing forested habitats, particularly along the riparian corridors of the Refuge. Adverse affects may occur through the management of edge hardwood forests for early successional habitat if those areas are used as roosts by Indiana bats. Currently, there are no documented occurrences of Indiana bats in the north end of the Refuge where much of the edge hardwood cutting is proposed. Increasing the surveys for Indiana bats in these areas will provide better information on the use and distribution of Indiana bats in Refuge habitats. Surveys for Indiana bats during summer months will focus on documentation of roost and foraging sites. To prevent adverse affects, clearing of hardwood habitats will be restricted to those areas which have been surveyed and determined to not be used as roosting or foraging sites for Indiana bats. The Refuge will work with the WVFO to develop appropriate survey protocols and management strategies to protect and enhance Indiana bat habitat on Refuge land.

With adequate surveys and consultation with the WVFO we predict that no adverse effects to this species will occur from proposed management strategies in Alternative B of the draft CCP/EA.

B. Explanation of actions to be implemented to reduce adverse effects: N/A

VIII. Effect determination and response requested:[* = optional]

A. Listed species/designated critical habitat:

<u>Determination</u>	<u>Response requested</u>
no effect/no adverse modification	___ *Concurrence
may affect, but is not likely to adversely affect species/adversely modify critical habitat Cheat Mountain salamander (<i>Plethodon netting</i>) Indiana Bat (<i>Myotis sodalis</i>)	 Concurrence
may affect, and is likely to adversely affect species/adversely modify critical habitat (species: _____)	___ Formal Consultation

B. Proposed species/proposed critical habitat:

<u>Determination</u>	<u>Response requested</u>
no effect on proposed species/no adverse modification of proposed critical habitat (species: _____)	___ *Concurrence
is likely to jeopardize proposed species/adversely modify proposed critical habitat (species: _____)	___ Conference

C. Candidate species:

<u>Determination</u>	<u>Response requested</u>
no effect (species: _____)	___ *Concurrence
is likely to jeopardize candidate species (species: _____)	___ Conference


Project Biologist (Requestor)

4/25/10
Date

IX. Reviewing ESFO Evaluation:

- A. Concurrence X Nonconcurrence _____
- B. Formal consultation required _____
- C. Conference required _____
- D. Informal conference required _____
- E. Remarks (attach additional pages as needed):


Endangered Species Biologist (Reviewer),
West Virginia Field Office

4/20/2010
Date


Supervisor, West Virginia Field Office

4/20/2010
Date